Offshore Hydrogen Production

An IEA Hydrogen TCP Task in Definition

Omar Ibrahim\(^1\), Paulo Partidário\(^2\), Pedro Amaral Jorge\(^3\), Upul Wijayantha\(^4\)

1 ORE Catapult (UK); 2 DGE (PT); 3 APREN (PT); 4 Cranfield Uni. (UK)

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The H₂TCP in a nutshell

**Members**
- 23 Member Countries
- 9 Sponsors
  - European Commission + UNIDO

**Tasks**
- 5 Ongoing
- 39 Finished
- ≥ 8 in definition

**Experts involved**
In collaborative research on hydrogen and hydrogen technologies

- 34 Members
- 40+ Tasks
- 250+ Experts involved
Task portfolio status

February 2023

Preliminary Idea → Project Definition Phase → Kick-off → Active → Closing Steps → End

- Task 40 - Energy Storage and Conversion
- Task 41 - Analysis and Modelling of H₂ Technologies
- Task 42 - Underground H₂ Storage
- Task 43 - Safety and RCS of Large-Scale H₂ Energy Applications
- Task 44 - HYNE
- Task 37 - H₂ Safety
- Task 38 - PtH & HtX
- Task 39 - H₂ in the Maritime

- International H₂ Supply Chains
- H₂ LCA, societal and environmental impact
- H₂ for Marine Applications + Ports
- H₂ in Islands
- H₂ in the Mining, Mineral Processing, and Resource Sectors
- Renewable H₂
- H₂ Certification
- Natural H₂
- Off-shore H₂ Production

H₂ for Marine Applications + Ports
H₂ in Islands
H₂ in the Mining, Mineral Processing, and Resource Sectors

H₂ LCA, societal and environmental impact

Renewable H₂
H₂ Certification

Natural H₂
Off-shore H₂ Production

Project portfolio status

H₂ in Industry

Natural H₂
Task portfolio status

- International H₂ Supply Chains
- H₂ LCA, societal and environmental impact
- H₂ for Marine Applications + Ports
- H₂ in Islands
- H₂ in the Mining, Mineral Processing, and Resource Sectors

- Project Definition Phase
  - H₂ in Industry
  - Natural H₂
  - Off-shore H₂ Production

- Kick-off

- Active

- Closing Steps

- End

- Task 40 – Energy Storage and Conversion
  - Task 42 – Underground H₂ Storage
  - Task 43 – Safety and RCS of Large-Scale H₂ Energy Applications
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Preliminary Idea

February 2023
Offshore \( \text{H}_2 \) Production – A Task in Definition

Outline

• Why \( \text{OH}_2\text{P} \)?
• Main concept & objectives
• Methodology
• Call for collaboration
• Why OH$_2$P?

Fig. 1 – World Hydrogen production by source (In: DNV-GL, 2021).

Fig. 2 – The global LCOE of wind power decline (2015-2050) (In: Wiser et al., 2021).
Main concept & objectives

- Build and facilitate a commonly integrated OH$_2$P system approach
- Provide an international R&I collaboration platform
- Produce recommendations and guidance to related decision-making processes
Main concept & objectives

Guide-lines on main value chain technologies

A systemic and sustainable way to define the current relevant gaps

A roadmap to disseminate recommendations

Enabling framework proposals

International community of stakeholders

Evidence-based policymaking
Methodology: Task structure

Subtask 1: Management & Communication
• Assuring achieving impactful results within the predefined scope.
• An innovative workplan managing the 4 interrelated subtasks and the planned deliverables along.

Subtask 2: H2 production from offshore wind – resources and technology
• Describe and provide insights on the different building blocks and system design of the value chain, assisted by two main routes: dedicated or hybrid wind farms (fixed, floating).
• Exploring plausible technical alternatives applied to different contexts, at system and component levels.

Subtask 3: OH₂ system-based value chains, business models and best practices
• Provide insights on how to unlock the potential by addressing the value chain, derived configurations and the subsequent set of variables affecting performance and LCoH.
• An ecosystem will have to be defined addressing that set of variables and key business-related challenges (financial, WACC, risk analysis and mitigation).
Methodology: Task structure

Subtask 4: Cross-cutting issues
- Addressing the complex interrelated value chains that require set of enablers and implementing conditions impacting the innovation chain.
- Delivering a systematic and holistic approach to ensure the value chains can deliver in a sustainable way by integrating safety and legal issues as well as social, environmental and socio-economic values.

Subtask 5: Strategic Planning and Road-mapping
- Assisting the interdisciplinary and holistic approach adopted.
- Alignment of purposes based on: defining a vision, direction, identified goals, objectives and actions, as well as a monitoring and feedback stage.
Call for collaboration

• Observer
• Active participant

Task manager: Paulo.Partidario@dgeg.gov.pt
ST2 leader: Omar.Ibrahim@ore.catapult.org.uk
Offshore Hydrogen Production
2023-25

Task manager: Paulo Partidário
paulo.partidario@dgeg.gov.pt

Proposal by:
Omar Ibrahim (Catapult, UK)
Pedro A. Jorge (APREN, PT)
Upul Wilayantha (U. Cranfield, UK)
Paulo Partidário (DGE, PT)

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Thank You!

Task manager: Paulo.Partidario@dgeg.gov.pt
ST2 leader: Omar.Ibrahim@ore.catapult.org.uk